In re Application of: Atilla Uz
Application No.: 10/598,785
Atty. Docket No.: PHDL0860-010

Art Group: 1792
Examiner: David Cormier

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A dishwasher [[(1)]], for determining rotor blocking, pump felt sticking, filter clogging, increase of a viscosity or the amount of foam in a washing water that influence the washing performance negatively, comprising

a wash tub [[(2)]] in which the dishes to be washed are placed is placed,

a sump [[(3)]] which is in the lower section of the wash tub [[(2)]], where the water present in the wash tub [[(2)]] is collected during washing operation,

a circulation pump [[(4)]], driven by an electric motor with variable rpm, turning the water in the sump [[(3)]] back to the wash tub [[(2)]],

a drain pump (5) which drains for draining the water collected in the sump [[(3)]] at the end of the washing operation out of the dishwasher [[(1)]] and

a filter [[(6)]] preventing the for preventing dirt from getting into the circulation during washing and thus decreasing the effectiveness of washing,

characterized by and a control card [[(7)]], tracing the change of the current (I) drawn by the circulation pump [[(4)]] from a network the network, determines the effects such as rotor blocking, pump felt sticking, filter (6) clogging and increase of the viscosity or the amount of foam in the washing water that influence the washing performance negatively, and provides the solution by changing to change the rpm and/or direction of rotation of the circulation pump (4).

Claim 2 (cancelled)

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Claim 3 (cancelled)

Claim 4 (cancelled)

Claim 5 (cancelled)

Claim 6 (cancelled)

Claim 7 (previously presented): The dishwasher in claim 1 wherein the control card further comprises a control method ~~for determining that~~, used when the current (I) drawn by the circulation pump [[(4)]] from the network suddenly increases and exceeds a limit current value (Imax) or that the motor stops ~~completely~~ completely, comprising the steps of,

with the start-up current (Io) enabling the circulation pump [[(4)]] to shift from inoperative position to the operating position:

selected from the group consisting of making start-up attempts of a previously specified number (n) in the positive rotation direction and making n start-up attempts in the positive rotation direction by increasing the torque with a current higher than the start-up current (Io), and

~~if no success is obtained~~, making n start-up attempts in the negative rotation direction with the start-up current (Io) and making n start-up attempts in the negative rotation direction by increasing the torque with a current higher than the start-up current (Io).

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Claim 8 (previously presented): The dishwasher in claim 1 wherein the control card further comprises a control method for deciding ~~that the washing water is not suitable~~ <u>to replace the washing water</u> comprising the steps of:

gradually increasing current (I) <u>until the current</u> exceeds a certain limit current value (Imax) <u>to determine whether the viscosity of the washing water has increased according to the current (I) amount,</u> letting the circulation pump [[(4)]] continue its operation at low rpm after it is decided that the viscosity of the washing <u>water has</u> ~~water is~~ increased, draining the washing water and taking clean water <u>into the dishwasher</u> ~~if it is decided that the washing water is not suitable according to the variation of the current (I) amount~~.

Claim 9 (previously presented): The dishwasher in claim 1 wherein the control card further comprises a control method ~~for comprising the steps of~~ <u>comprising the steps of:</u>

detecting that the current (I) drawn by the circulation pump [[(4)]] from the network fluctuates within a <u>current limit</u> proper range <u>of Imin to Imax,</u>

taking some water into the sump [[(3)]],

lowering the rpm of the circulation pump [[(4)]] until the value where it can operate without absorbing air and continuing with the washing operation.

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Claim 10 (previously presented): The dishwasher in claim 1 wherein the control card further comprises a control method ~~for comprising the steps of~~ comprising the steps of:

detecting that the current (I) drawn by the circulation pump [[(4)]] from the network is fluctuating ~~fluctuates within an interval~~ and is gradually decreasing or increasing with respect to a nominal current (Inom) or ~~when waves with~~ has high amplitude fluctuations ~~with high amplitudes are observed~~,

decreasing the rpm of the circulation pump [[(4)]] ~~until the current fluctuations are lowered to a preset level~~ to lower the current fluctuations to a preset level near the nominal current ~~and thus it is provided~~ to provide that the foam remains above the sucking level of the circulation pump [[(4)]] in the sump [[(3)]] and continuing of the washing operation with the circulation pump ~~(4) sucking~~ having enough water to prevent foam.

Claim 11 (previously presented): The dishwasher in claim 1 wherein the control card further comprises a control method ~~for comprising the steps of~~ comprising the steps of:

detecting a decreasing change of the current (I), with small or no network fluctuations, drawn by the circulation pump [[(4)]] from the network with respect to nominal current ~~(Inom)~~ (Inom),

 taking some water into the dishwasher [[(1)]] and

lowering the rpm of the circulation pump [[(4)]] and

continuing with the normal washing operation,

deciding that the filter [[(6)]] cannot be cleaned in the normal cycle if it is determined that the drawn current (I) does not return to normal,

draining the water completely,

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taking clean water into the dishwasher ~~and making it pass~~ and

passing the clean water through the filter ~~(6) thus washing~~ to wash the filter [[(6)]] and

draining the water.


Claim 12 (previously presented): A ~~control method for a dishwasher (1) as in claim 9 determining that the rotor is blocked or its rotation is disturbed due to sticking of the pump felt or jamming of a solid piece when it is determined by the control card (7), providing a~~ dishwasher (1) according to claim 9 wherein the control method determines if the rotor is blocked or its rotation is disturbed due to sticking of the pump felt or jamming of a solid piece comprising the steps of:

measuring if the current (I) drawn by the circulation pump [[(4)]] from the network suddenly increases and exceeds a limit current value (Imax) or that the motor stops completely, ~~in order to solve this problem, and comprising the steps of;~~ and with the start-up current (Io) enabling the circulation pump [[(4)]] to shift from inoperative position to the operating position,

selecting from the group consisting of making start-up attempts of a previously specified number (n) in the positive rotation direction and making n start-up attempts in the positive rotation direction by increasing the torque with a current higher than the start-up current (Io), ~~if no success is obtained,~~ and making n start-up attempts in the negative rotation direction with the start-up current (Io) and making n start-up attempts in the negative rotation direction by increasing the torque with a current higher than the start-up current (Io).

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Claim 13 (previously presented): A ~~control method for a dishwasher (1) as in claim 9 deciding that the dirt and oil getting into the washing water increases the viscosity of the washing water when the increasing deviation of the current (I) drawn by the circulation pump (4) from the network providing a~~ dishwasher (1) according to Claim 9 wherein the control method determines if dirt and oil getting into the washing water and increasing the viscosity of the washing water by the steps of

determining an increasing deviation of the current (I) drawn by the circulation pump with respect to nominal current (Inom) is observed by the control card [[(7)]], and

~~comprising the steps of: deciding that the washing water is not suitable if the gradually increasing current (I) exceeds a certain limit current value (Imax), letting the circulation pump (4) continue its operation at low rpm after it is decided that the viscosity of the washing water is increased, draining the washing water and taking clean water if it is decided that the washing water is not suitable according to the variation of the current (I) amount.~~

determining whether the viscosity of the washing water has increased according to the current (I) amount by gradually increasing current (I) until the current exceeds a certain limit current value (Imax),

letting the circulation pump continue its operation at low rpm after it is decided that the viscosity of the washing water has increased, draining the washing water and taking clean water into the dishwasher.

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Claim 14 (previously presented): A ~~control method for a dishwasher (1) as in claim 9, deciding that the filter (6) in the sump (3) is partly clogged and the circulation pump (4) sucks air-water mixture when it is detected by the control card (7) providing a~~ dishwasher (1) according to Claim 9 <u>wherein the control method determines if the filter in the sump is partly clogged and the circulation pump sucks an air-water mixture when it is detected by the control card comprising the steps of:</u>

<u>determining</u> that the current (I) drawn by the circulation pump [[(4)]] from the network fluctuates within a <u>current limit</u> proper range <u>of Imin to Imax</u>, ~~and comprising the steps of:~~

taking some water into the sump [[(3)]], <u>and</u>

_____ lowering the rpm of the circulation pump [[(4)]] until the value where it can operate without absorbing air and continuing with the washing operation.

Claim 15 (previously presented): A ~~control method for a dishwasher (1) as in claim 9 deciding that the amount of foam in the washing water prevents the circulation pump (4) from proper operation when it is detected by the control card (7) providing a~~ dishwasher [[(1)]] according to Claim 9 wherein the control method determines if the amount of foam in the washing water prevents the circulation pump from proper operation comprising the steps of:

        detecting that the current (I) drawn by the circulation pump [[(4)]] from the network is fluctuating ~~fluctuates within an interval~~ and is gradually decreasing or increasing with respect to a nominal current (Inom) or ~~when waves with~~ has high amplitude fluctuations with ~~high amplitudes are observed,  and comprising the steps of:~~ and

        decreasing the rpm of the circulation pump [[(4)]] ~~until the current fluctuations are lowered to a preset level~~ to lower the current fluctuations to a preset level near the nominal current ~~and thus it is provided~~ to provide that the foam remains above the sucking level of the circulation pump [[(4)]] in the sump [[(3)]] and continuing of the washing operation with the circulation pump ~~(4) sucking~~ having enough water to prevent foam.

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Claim 16 (previously presented):  A ~~control method for a dishwasher (1) as in claim 9 deciding that the filter (6) is clogged completely and the water level in the sump (3) providing a~~ dishwasher (1) according to Claim 9 <u>wherein the control method deremines if the filter is clogged comprising the steps of:</u>

~~has decreased since the washing water cannot pass to the sump (3), when a decreasing change of the current (I) drawn by the circulation pump (4) from the network with respect to nominal current (Inom) is detected by the control card (7), and comprising the steps of: taking some water into the dishwasher (1) and lowering the rpm of the circulation pump (4) and continuing with the normal washing operation, deciding that the filter (6) cannot be cleaned in the normal cycle if it is determined that the drawn current (I) does not return to normal, draining the water completely, taking clean water and making it pass through the filter (6) thus washing the filter (6) and draining the water.~~

detecting a decreasing change of the current (I)<u>, with small or no network fluctuations,</u> drawn by the circulation pump [[(4)]] from the network with respect to nominal current (~~Inom~~) <u>(Inom),</u>

taking some water into the dishwasher [[(1)]] and

lowering the rpm of the circulation pump [[(4)]] and

continuing with the normal washing operation,

deciding that the filter [[(6)]] cannot be cleaned in the normal cycle if it is determined that the drawn current (I) does not return to normal,

draining the water completely,

taking clean water <u>into the dishwasher</u> ~~and making it pass~~ <u>and</u>

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~~~~~~~passing the clean water~~ through the filter ~~(6) thus washing~~ to wash the filter [[(6)]] and

draining the water.


Claim 17 (previously presented): The dishwasher in claim 9 wherein the control card further comprises a control method ~~for determining that~~, used when the current (I) drawn by the circulation pump [[(4)]] from the network suddenly increases and exceeds a limit current value (Imax) or that the motor stops ~~completely~~ completely, comprising the steps of,

with the start-up current (Io) enabling the circulation pump [[(4)]] to shift from inoperative position to the operating position:

selected from the group consisting of making start-up attempts of a previously specified number (n) in the positive rotation direction and making n start-up attempts in the positive rotation direction by increasing the torque with a current higher than the start-up current (Io), and

~~if no success is obtained~~, making n start-up attempts in the negative rotation direction with the start-up current (Io) and making n start-up attempts in the negative rotation direction by increasing the torque with a current higher than the start-up current (Io).

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Claim 18 (previously presented): The dishwasher in claim 9 wherein the control card further comprises a control method for ~~that the washing water is not suitable~~ to replace the washing water comprising the steps of:

gradually increasing current (I) until the current exceeds a certain limit current value (Imax) to determine whether the viscosity of the washing water has increased according to the current (I) amount, letting the circulation pump [[(4)]] continue its operation at low rpm after it is decided that the viscosity of the washing water has ~~water is~~ increased, draining the washing water and taking clean water into the dishwasher ~~if it is decided that the washing water is not suitable according to the variation of the current (I) amount~~.

Claim 19 (previously presented): The dishwasher in claim 9 wherein the control card further comprises a control method ~~for comprising the steps of~~ comprising the steps of:

detecting that the current (I) drawn by the circulation pump [[(4)]] from the network fluctuates within a current limit proper range of Imin to Imax,

taking some water into the sump [[(3)]],

lowering the rpm of the circulation pump [[(4)]] until the value where it can operate without absorbing air and continuing with the washing operation.

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Claim 20 (previously presented): The dishwasher in claim 9 wherein the control card further comprises a control method ~~for comprising the steps of~~ comprising the steps of:

detecting that the current (I) drawn by the circulation pump [[(4)]] from the network is fluctuating ~~fluctuates within an interval~~ and is gradually decreasing or increasing with respect to a nominal current (Inom) or ~~when waves with~~ has high amplitude fluctuations with ~~high amplitudes are observed~~,

decreasing the rpm of the circulation pump [[(4)]] ~~until the current fluctuations are lowered to a preset level~~ to lower the current fluctuations to a preset level near the nominal current ~~and thus it is provided~~ to provide that the foam remains above the sucking level of the circulation pump [[(4)]] in the sump [[(3)]] and continuing of the washing operation with the circulation pump ~~(4) sucking~~ having enough water to prevent foam.